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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,270	06/24/2002	Daniel Charquet	12093/888	4703

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EXAMINER


MORILLO, JANEL COMBS

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/089,270	Applicant(s) CHARQUET, DANIEL ET AL	
	Examiner Janelle Combs-Morillo	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>032702</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 10-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 states “a ratio of a niobium content less 0.5% to an iron content and at least one of not supplemented and supplemented by at least one of a chromium and a vanadium content higher than 2.5”, which renders the claim indefinite. In particular, it is unclear what “a ratio of a niobium content less 0.5% to an iron content” means- typically ratios are given in decimal form, not percentage, nevertheless, clarity is needed (additionally, what does the percentage refer to?). The examiner points out that the specification page 2 line 22 mentions a ratio $Nb/Fe > 2.5$, if this is what applicant meant by the above phrase, please more clearly rephrase. Additionally, it is unclear what “at least one of not supplemented and supplemented by at least one of a chromium and a vanadium content” means, wherein the limitation “from 0.01% to 0.25% in total of at least one of chromium and vanadium” is already set forth in said claim, lines 5-6.

Similar phrases are present in independent claims 13, 14, 15, and 18. Claims dependent on the above rejected claims are likewise rejected under this statute. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 93/16205 (WO'205) in view of Rebeyrolle (US 5,832,050).

Concerning independent claims 10 and 15, WO'205 teaches a Zr based alloy for use in light water nuclear core structure elements (page 11 lines 1-2) comprising (in weight%): up to 1% V, up to 1% Nb, up to 0.5% Sn, 0.2-0.5% Fe, 0.1-0.4% Cr, up to 2200 ppm O (see WO'205 p 10 Table 1), which overlaps the instant ranges of Fe, Nb, Sn, O, Cr, and V. WO'205 teaches that said lower level of Sn improves the corrosion resistance (page 3 lines 1-2). Concerning the ratio mentioned in lines 6-8, it is unclear (see 112 second paragraph rejection above) what this ratio is referring to. If it is the Nb/Fe ratio (that is, $Nb/Fe > 2.5$), then because WO'205 teaches a Nb range of 0-1.0% and a Fe range of 0.2-0.5% Fe, WO'205 is held to teach a Nb/Fe ratio of 0-5.0, which overlaps the instant ratio.

WO'205 does not teach the instant range of S. However, Rebeyrolle teaches 8-30 ppm S dramatically increases the creep resistance (see Fig. 1, abstract) of Zr alloys. It would have been obvious to one of ordinary skill in the art to add 8-30 ppm S to the Zr alloy taught by WO'205 because Rebeyrolle teaches 8-30 ppm S dramatically increases the creep resistance (Fig. 1, column 4 lines 9-11) of Zr alloys.

Overlapping ranges have been held to be a prima facie case of obviousness, see MPEP § 2144.05. It would have been obvious to one of ordinary skill in the art to select any portion of the range, including the claimed range, from the broader range disclosed in the prior art, because the prior art finds that said composition in the entire disclosed range has a suitable utility. Because the prior art teaches an overlapping alloy composition, it is held that WO'205 and Rebeyrolle have created a prima facie case of obviousness of the presently claimed invention.

Concerning dependent claims 11, 12, and 17, WO'205 teaches compositional ranges that overlap or touch the boundary of the presently claimed ranges.

Concerning independent claims 13 and 14, as stated above, the combination of WO'205 and Rebeyrolle teaches an overlapping Zr alloy composition. WO'205 further teaches that Zr alloys are used in fuel rod claddings and in fuel assembly structural components of nuclear reactors in the form of strips and tubes (page 1 lines 17-19).

Concerning claim 16, which mentions the ratio if higher than 3, as stated above, it is unclear (see 112 second paragraph rejection above) what this ratio is referring to. If it is the Nb/Fe ratio, then because WO'205 teaches a Nb range of 0-1.0% and a Fe range of 0.2-0.5% Fe, WO'205 is held to teach a Nb/Fe ratio of 0-5.0, which overlaps the instant ratio.

5. Claims 10-17 rejected under 35 U.S.C. 103(a) as being unpatentable over FR 2,769,637 (FR'637) in view of Rebeyrolle (US 5,832,050).

Concerning independent claims 10 and 15, FR'637 teaches a Zr based alloy for use in nuclear fuel cladding (abstract) comprising (in weight%): 0.2-1.7% Sn, 0.18-0.6% Fe, 0.07-0.4% Cr, 0.05-1% Nb, balance Zr (abstract), which overlaps the instant ranges of Fe, Nb, Sn, and Cr. Concerning the ratio mentioned in lines 6-8, it is unclear (see 112 second paragraph rejection

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above) what this ratio is referring to. If it is the Nb/Fe ratio (that is, $\text{Nb/Fe} > 2.5$), then because FR'637 teaches a Nb range of 0.05-1.0% and a Fe range of 0.18-0.6% Fe, FR'637 is held to teach a Nb/Fe ratio of 0.083-5.6, which overlaps the instant ratio.

FR'637 does not teach the instant range of S. However, Rebeyrolle teaches 8-30 ppm S dramatically increases the creep resistance (see Fig. 1, abstract) of Zr alloys. It would have been obvious to one of ordinary skill in the art to add 8-30 ppm S to the Zr alloy taught by FR'637 because Rebeyrolle teaches 8-30 ppm S dramatically increases the creep resistance (Fig. 1, column 4 lines 9-11) of Zr alloys.

Overlapping ranges have been held to be a prima facie case of obviousness, see MPEP § 2144.05. It would have been obvious to one of ordinary skill in the art to select any portion of the range, including the claimed range, from the broader range disclosed in the prior art, because the prior art finds that said composition in the entire disclosed range has a suitable utility. Because the prior art teaches an overlapping alloy composition, it is held that FR'637 and Rebeyrolle have created a prima facie case of obviousness of the presently claimed invention.

Concerning dependent claims 11, 12, and 17, FR'637 teaches compositional ranges that overlap or touch the boundary of the presently claimed ranges.

Concerning independent claims 13 and 14, as stated above, the combination of FR'637 and Rebeyrolle teaches an overlapping Zr alloy composition. FR'637 further teaches that Zr alloys are used in fuel rod claddings and in fuel assembly structural components of nuclear reactors in the form of strips and tubes (page 1 lines 17-19).

Concerning claim 16, which mentions the ratio if higher than 3, as stated above, it is unclear (see 112 second paragraph rejection above) what this ratio is referring to. If it is the

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Nb/Fe ratio, then because FR'637 teaches a Nb range of 0.05-1.0% and a Fe range of 0.18-0.6% Fe, FR'637 is held to teach a Nb/Fe ratio of 0.083-5.6, which overlaps the instant ratio.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over FR 2,769,637 (FR'637) in view of Rebeyrolle (US 5,832,050) and "ASM Handbook Vol. 2", pp 662-663.

As stated above, the combination of FR'637 and Rebeyrolle teaches an overlapping Zr alloy composition. FR'637 teaches a process of solution heat treatment (heating and quenching), hot extruding, repeated cold rolling with annealing, as well as final annealing, wherein said annealing takes place at 550-850°C (abstract). FR'637 does not teach (in the translated parts) the hot extrusion temperature, or annealing in an inert or vacuum atmosphere. However, "ASM Handbook Vol. 2" pp. 663 teaches that Zr is extruded at temperature between 675-800°C (see "Extrusion of Tubing"), and annealed in vacuums or argon to preserve the cold rolled surface (page 663, 3rd full paragraph). It would have been obvious to one of ordinary skill in the art to extrude and anneal the Zr alloy taught by FR'637 and Rebeyrolle, at the temperatures set forth by "ASM Handbook Vol. 2" because said handbook teaches that these temperature ranges are typical for forming Zr alloys.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

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provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 10-11, and 13-17 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,544,361 B1 (US'361). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of US'361 teach a Zr alloy with 0.8-1.3% Nb, 500-2000 ppm O, 5-35 ppm S, less than 0.25% Fe+Cr+V, less than 300 ppm Sn, which overlaps the instant alloy compositional ranges. As stated above, it is unclear (see 112 second paragraph rejection above) what this ratio in claims 10, 13-16 is referring to. It would have been obvious to one of ordinary skill in the art to select any portion of the range, including the claimed range, from the broader range disclosed in the prior art, because the prior art finds that said composition in the entire disclosed range has a suitable utility.


Conclusion


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


GEORGE WYSZOMIERSKI
PRIMARY EXAMINER


jcm
March 26, 2004